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Perrien

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(54) **FUEL DISPENSING SYSTEM**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 363 days.

This patent is subject to a terminal disclaimer.

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(60) Provisional application No. 60/798,813, filed on May 9, 2006.

(51) **Int. Cl.**
B60S 5/02 (2006.01)

(52) **U.S. Cl.** **137/234.6**; 137/357

(58) **Field of Classification Search** 137/234.6, 137/899, 357; 222/173
See application file for complete search history.

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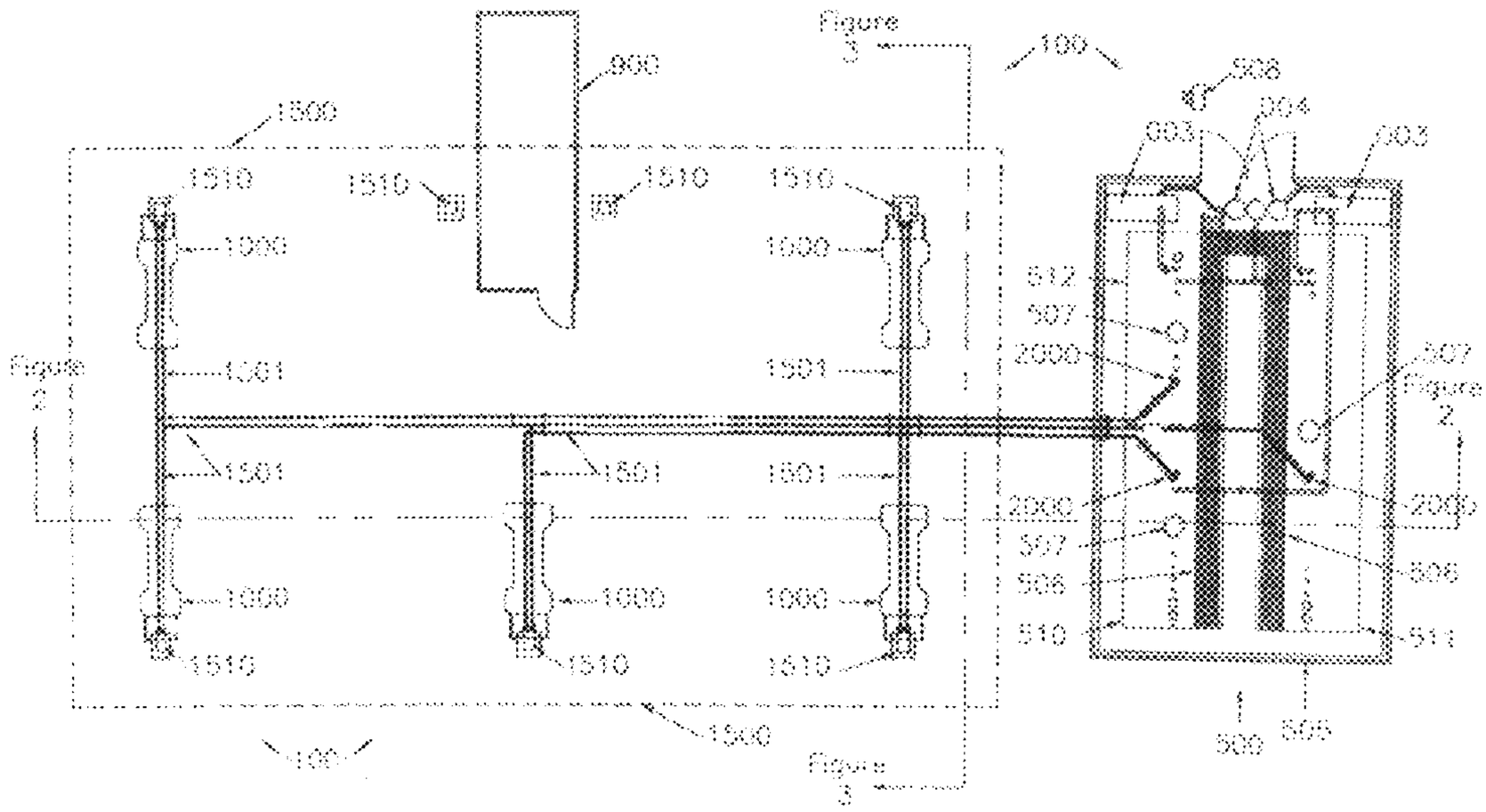
(57) **ABSTRACT**

A fueling station comprising an above-ground tank, above-ground piping, and above-ground fuel pump modules adapted for easy construction, installation, and maintenance.

20 Claims, 4 Drawing Sheets



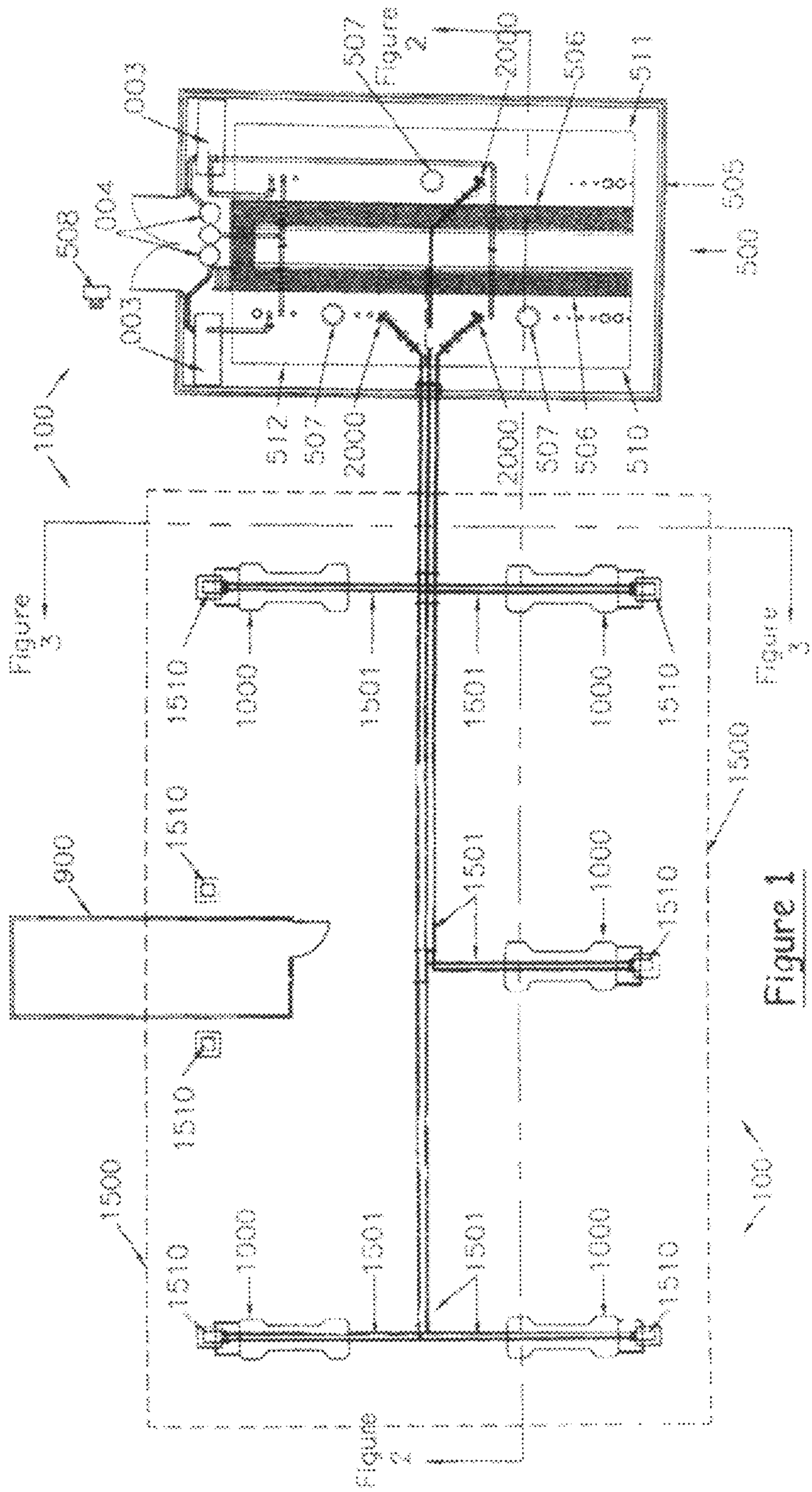

100
2000
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Figure 2

Figure 1

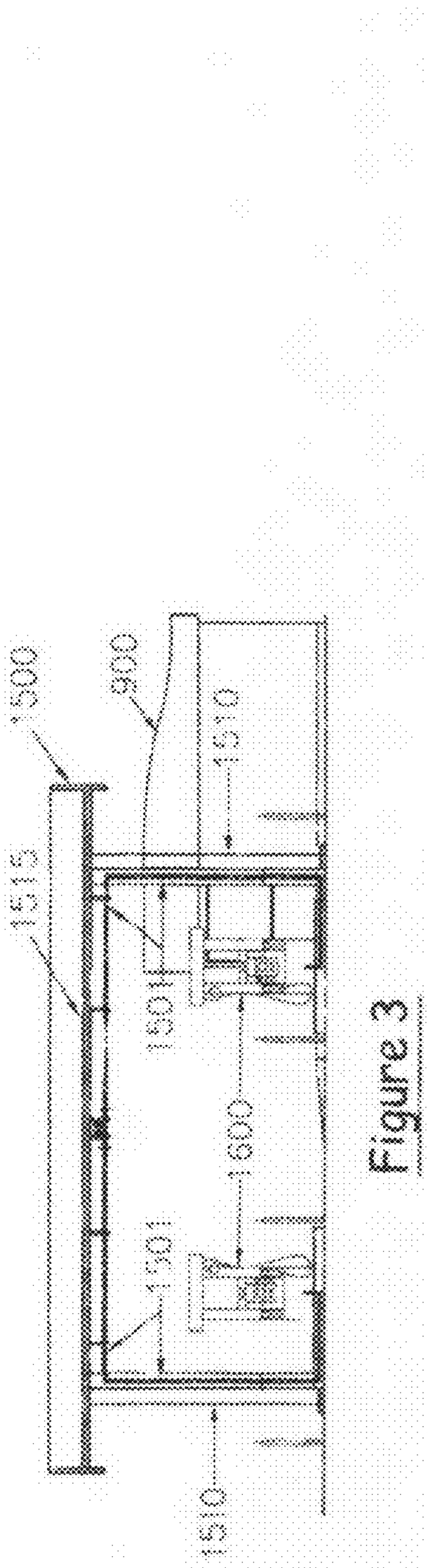

Figure 3

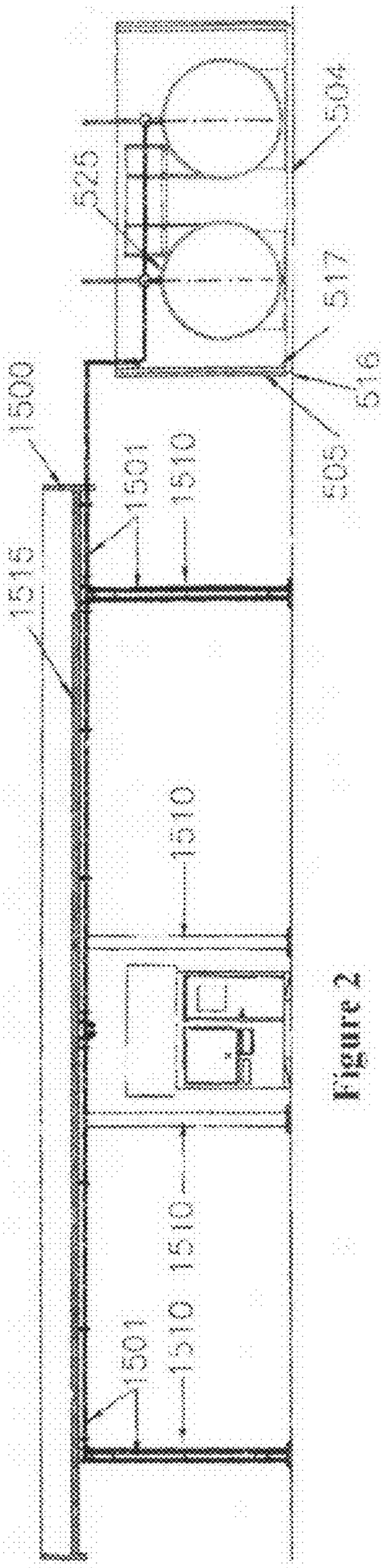

Figure 2

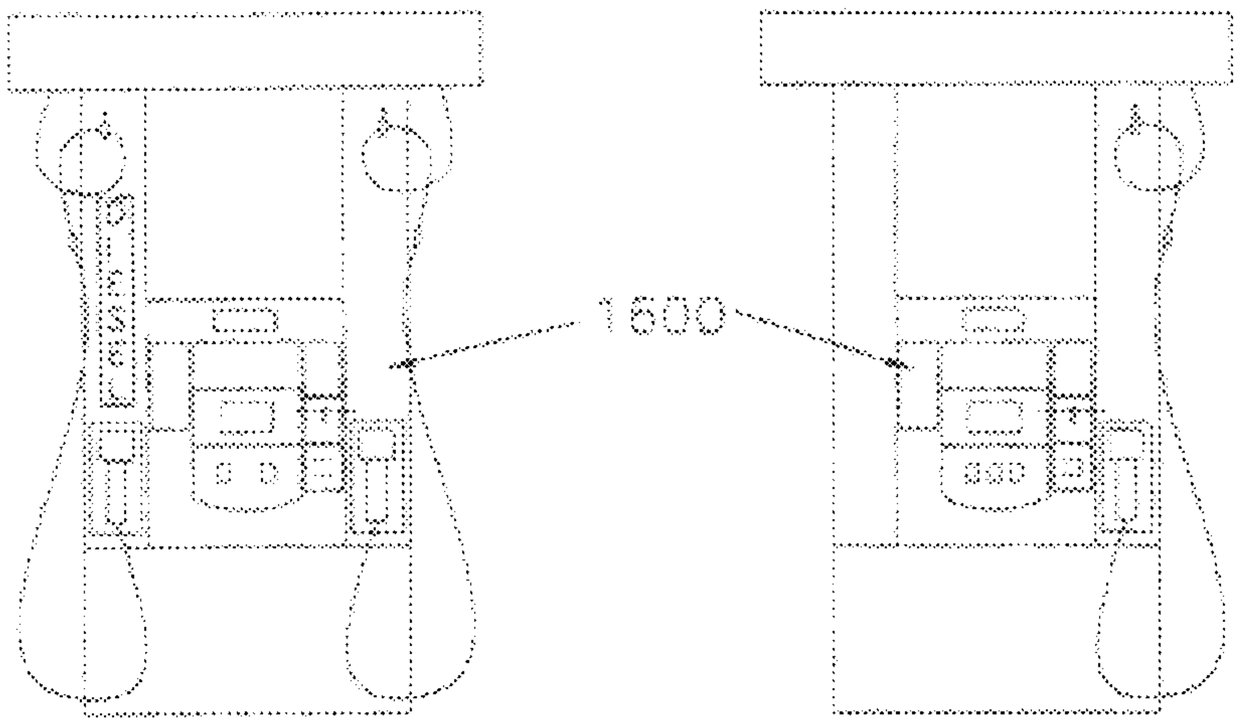

Figure 4

Figure 5

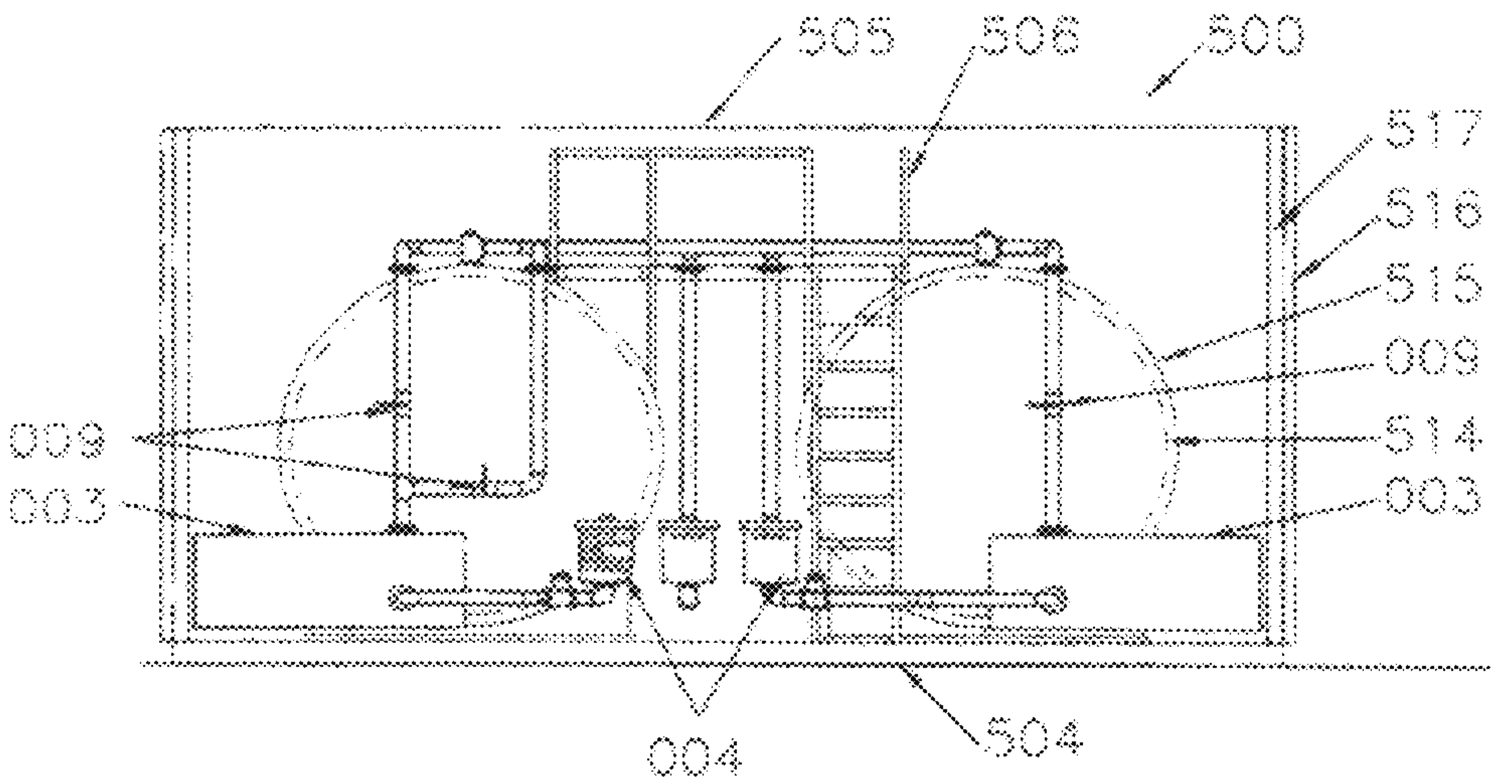

Figure 6

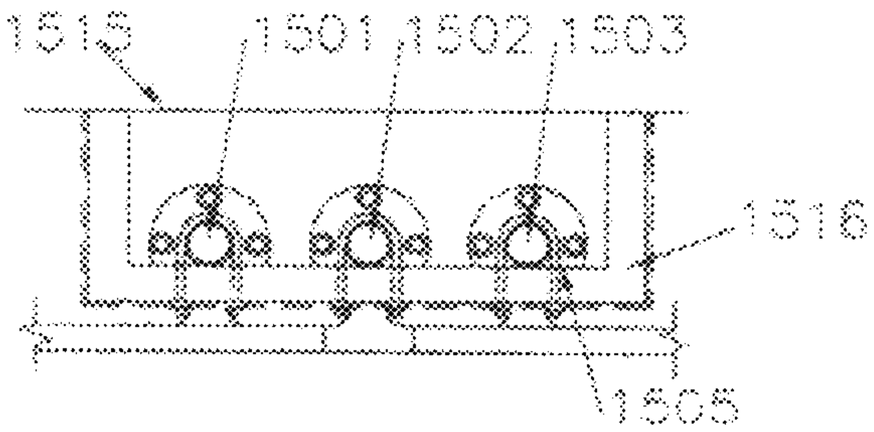

Figure 7

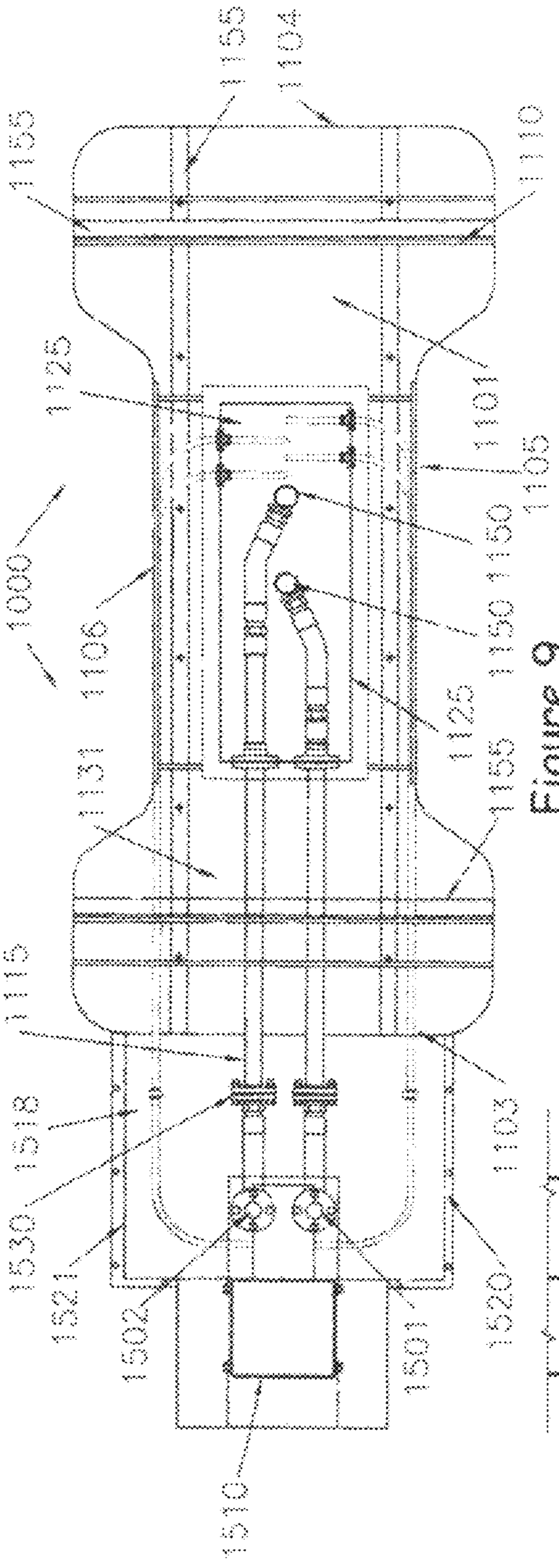

Figure 9

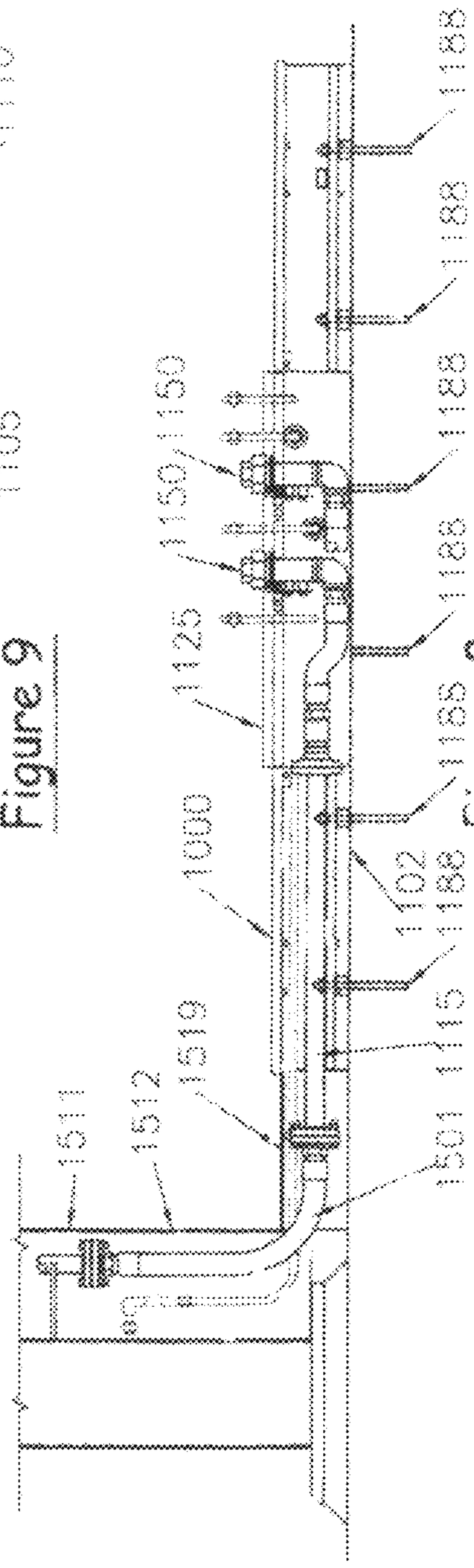

Figure 8

FUEL DISPENSING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to and is a continuation of U.S. patent application Ser. No. 11/801,013, filed May 8, 2007 now U.S. Pat. No. 7,721,751, which claims priority to and is a continuation-in-part of U.S. application Ser. No. 60/798,813, filed May 9, 2006, the entirety of each is hereby incorporated by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

REFERENCE TO A MICROFICHE APPENDIX

Not Applicable.

RESERVATION OF RIGHTS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to the field of fueling station structures. In particular, the present invention relates specifically to a fueling station structure without subterraneous tanks or piping.

2. Description of the Known Art

As will be appreciated by those skilled in the art, fuel stations conventionally store fuel underground in tanks with underground piping running from the tanks to the fuel pump. Patents disclosing information relevant to fuel stations include U.S. Pat. No. 2,021,544, issued to G. S. Crown on Nov. 19, 1935; U.S. Pat. No. 2,959,826, issued to F. Larsen et al. on Nov. 15, 1960; U.S. Pat. No. 3,395,723, issued to Hiyoshi Tatsuno on Aug. 6, 1968; U.S. Pat. No. 3,774,723, issued to Johnston on Nov. 27, 1973; U.S. Pat. No. 4,901,748, issued to Shotmeyer on Feb. 20, 1990; U.S. Pat. No. 4,986,446, issued to Montgomery, et al. on Jan. 22, 1991; U.S. Pat. No. 5,114,046, issued to Bryant on May 19, 1992; U.S. Pat. No. 5,299,709, issued to Beerbower et al. on Apr. 5, 1994; U.S. Pat. No. 5,400,924, issued to Brodie on Mar. 28, 1995; U.S. Pat. No. 5,413,135, issued to Poole on May 9, 1995; U.S. Pat. No. 5,526,964, issued to Moore et al. on Jun. 18, 1996; U.S. Pat. No. 5,634,503, issued to Musil et al. on Jun. 3, 1997; U.S. Pat. No. 5,711,456, issued to Bryant on Jan. 27, 1998; U.S. Pat. No. 5,954,085, issued to Moore, et al. on Sep. 21, 1999; U.S. Pat. No. 5,975,371, issued to Webb on Nov. 2, 1999; U.S. Pat. No. 6,105,602, issued to Sistonen on Aug. 22, 2000; U.S. Pat. No. 6,109,290, issued to Sabatinelli on Aug. 29, 2000; U.S. Pat. No. 6,435,204, issued to White et al. on Aug. 20, 2002; U.S. Pat. No. 6,820,378, issued to Lehto on Nov. 23, 2004. Each of these patents are hereby expressly incorporated by reference in their entirety.

U.S. Pat. No. 3,774,723, issued to Johnston on Nov. 27, 1973 entitled Food and Fuel Dispensing Processes and Structures Therefor. The abstract provides the following information. A cooperating set of systems and structures, i.e., a fuel supplying and dispensing system and structure, a food preparation and dispensing system and structure, and an air and gas removal system and structure combined with an air and aroma dispensing system, are arranged so that time required to add gasoline to each of several automobiles and perform related sales and service is used, in combination with positive olfactory and positive visual stimuli and blocking of negative olfactory stimuli, to increase the appetite of the passengers of such automobile for the food products sold at the same installation.

U.S. Pat. No. 4,901,748, issued to Shotmeyer on Feb. 20, 1990 entitled Filling station structure. The abstract provides the following information. A filling station structure includes a canopy for covering a vehicle refueling area. A pair of fuel storage vessels are elevated above the ground and contain separate tanks for holding fuel to be dispensed to the vehicles. The fuel storage vessels are contiguous with the canopy to form an integrated, covered filling station with above-ground, elevated tanks.

U.S. Pat. No. 4,986,446, issued to Montgomery, et al on Jan. 22, 1991, entitled Service Station Improvements. The abstract provides the following information. Service station for dispensing fuel to vehicles from fuel dispensers connected by fluid conduits to one or more fuel storage tanks characterized in that the fuel storage tanks are self-contained, flexible and collapsible bladder type tanks supported in an elevated position above the fuel dispensers and the vehicles to which fuel is to be dispensed. An open top containment vessel may also be supported at an elevated position and into which the bladder type tanks may be preferably lowered for non-attached disposition therein.

U.S. Pat. No. 5,114,046, issued to Bryant on May 19, 1992, entitled Above ground fuel storage and dispensing apparatus. The abstract provides the following information. An above ground fuel storage and dispensing apparatus that is self contained and includes a support frame on which a fuel storage tank is mounted and surrounded by a fuel containment vessel formed by side walls and a bottom of the support frame for containing any fuel that may leak from the tank or fittings and pipe extending from the tank. One corner of the support frame has the vertical side walls recessed to form a recessed compartment for the fuel dispensing pump and electrical equipment which are thereby protected by the frame and side walls from being damaged by vehicles or the like operated in the vicinity.

U.S. Pat. No. 5,299,709, issued to Beerbower et al. on Apr. 5, 1994 entitled Above ground fuel storage tank. The abstract provides the following information. An above ground storage tank is provided having an inner tank for primary storage, and an outer casing surrounding the inner tank. The outer casing includes both a casing body defining an opening, and a removable lid positioned over the opening. A fire-resistant seal is provided between the lid and casing body to inhibit transmission of fire and explosion hazards to stored materials, as well as preventing leaks and spills from escaping containment. It is preferred to further add a weather-resistant sealant around the periphery of the fire-resistant seal to inhibit weathering thereof.

U.S. Pat. No. 5,400,924, issued to Brodie on Mar. 28, 1995, entitled Above-ground fuel tank system. The abstract provides the following information. In an above ground fuel storage system, a containment vessel is selected to resist impact shock, as well as deformation from fire's heat and

internal hydraulic pressures in the presence of such heat. The fuel delivery input port, the fuel tank, all fuel lines and dispensing equipment are mounted fully enclosed within the confines of the containment vessel. The containment vessel may be transportable or be permanently emplaced on use site. Solar energy is utilized to allow operation in undeveloped areas. A remote control device permits system shut down to be initiated from a distance.

U.S. Pat. No. 5,413,135, issued to Poole on May 9, 1995, entitled Apparatus for serving comestibles and method of erecting same. The abstract provides the following information. A food and beverage serving apparatus that comprises multiple separate serving stations and a connecting superstructure all prefabricated to facilitate installation in an existing building's food service area with the serving stations spaced apart in a predetermined arrangement forming separate serving locations and the superstructure providing a means of unobtrusively routing utility connections, e.g., electricity, natural gas, water, etc., from remote utility sources to the serving stations, thereby enabling demolition or structural modification of the building area to be minimized and installation of the apparatus to be simplified.

U.S. Pat. No. 5,526,964, issued to Moore et al. on Jun. 18, 1996 entitled Fuel dispensing system. The abstract provides the following information. A fuel dispensing system comprising a foundation module including an underground fuel reservoir to store fuel to be dispensed and a conduit containment trough to house a fuel supply conduit and fuel dispensing conduit therein, a fuel dispensing module including a pump island to support a fuel dispensing device thereon and a canopy module held in fixed spaced relationship above the fuel dispensing module.

U.S. Pat. No. 5,634,503, issued to Musil et al. on Jun. 3, 1997, entitled Automated refueling system. The abstract provides the following information. A refueling system is provided, the system comprising: a plurality of vertically telescoping elements, the telescoping elements containing a constant length of flexible conduit for transfer of fuel; at least one vertically movable pulley to maintain a constant length of flexible hose within the telescoping elements; an overhead gantry capable of moving the vertically telescoping elements in two horizontal essentially perpendicular axes; and a rotating lower portion of the telescoping elements capable of rotating about an essentially vertical axis and supporting a fuel nozzle. The refueling system of the present invention does not result in significant segments of unsupported lengths of conduits for fuel, compressed air, vapor recovery, electrical power or control or sensor signals. It is relatively simple and utilizes readily available components and parts, and does not required significant machining of components. This results in an installation that is economical to install and operate.

U.S. Pat. No. 5,711,456, issued to Bryant on Jan. 27, 1998, entitled Above ground fuel transfer module. The abstract provides the following information. An above ground fuel transfer module includes a bottom surrounded by vertical side walls forming a fuel containment vessel. One corner of the support frame has the vertical side walls recessed to form a recessed compartment for a fuel dispensing pump and electrical equipment which are thereby protected by the frame and side walls from being damaged by vehicles or the like operated in the vicinity. An electronic circuit card connected to a control panel controls the transfer of fuel and monitors safety conditions.

U.S. Pat. No. 5,954,085, issued to Moore, et al. on Sep. 21, 1999, entitled Prefabricated modular fuel dispensing system. The abstract provides the following information. A fuel dispensing system comprising a foundation module including an underground fuel reservoir to store fuel to be dispensed and a conduit containment trough to house a fuel supply conduit and fuel dispensing conduit therein, a fuel dispensing module including a pump island to support a fuel dispensing device thereon and a canopy module held in fixed spaced relationship above the fuel dispensing module.

U.S. Pat. No. 5,975,371, issued to Webb on Nov. 2, 1999 entitled Modular aboveground service station and method of assembly. The abstract provides the following information. A modular, portable, environmentally friendly aboveground fueling assembly includes at least one pad member that is supported on the ground, and that is fabricated from a material that is heat resistant and that is resistant to exposure to petroleum products. A portable aboveground fuel tank is supported on the pad member, and at least one pumping station is included for dispensing fuel from the tank to a customer. A freestanding structure is secured to the fuel tank and the pad, and the structure is designed to give an aesthetic effect of a more substantial, permanent facility than would be given by the aboveground fuel tank standing alone. The components of the assembly are generally designed so as to be conveniently portable and so as to be simple to assemble and disassemble in the field. The assembly serves a need for inexpensive and environmentally friendly service stations, particularly in rural areas and underdeveloped countries.

U.S. Pat. No. 6,105,602, issued to Sistonen on Aug. 22, 2000, entitled Fuel station and method for assembling of the same. The abstract provides the following information. A fuel dispensing station having at least one underground tank, a pump island including at least one fuel pump for dispensing the fuel contained in the tank, and a pump roofing. The fuel dispensing station is provided with a common foundation wherein, directly or indirectly, the fuel tank or tanks, and other necessary tanks, the pump island, and pump roofing are all connected to each other as an integral unit. The dispensing station is adapted to be transported to an installation site as readily erectable blocks.

U.S. Pat. No. 6,109,290, issued to Sabatinelli on Aug. 29, 2000, entitled Fuel dispensing system. The abstract provides the following information. A prefabricated modular fuel dispensing system comprising a foundation, including a longitudinally extending tubular underground fuel tank, having a fuel storage compartment and a conduit containment trough along its upper surface, and a canopy supported above said tank when it is in place, the support being characterized by two sections, one connected to the tank side, and an upper section being attached to the canopy. The two sections are interconnected with horizontal impact relief structure arranged to fail when subjected to lateral impact of sufficient magnitude to otherwise bend the lower column portion or damage the tank.

U.S. Pat. No. 6,435,204, issued to White et al. on Aug. 20, 2002 entitled Fuel dispensing system. The abstract provides the following information. Dispensing system for automotive fuel including a casing mounted within the ground and containing a fuel flow meter and an associated valve. The meter is linked by a fuel line to a fuel tank. An above-ground structure is provided for supporting a dispensing hose to which the meter and associated valve within the casing are linked by a delivery line passing externally of the casing. The casing is adjacent to but separate from the above-ground structure whereby the aboveground structure is mounted independently of the casing.

U.S. Pat. No. 6,820,378, issued to Lehto on Nov. 23, 2004, entitled System and method specifically intended for the construction of fuel distribution forecourts. The abstract provides the following information. A system and method specifically

intended for the construction of fuel distribution forecourts, in which the forecourt contains at least one distribution pump (17), possibly an attached automatic dispenser (9), a pillar (4), which is specifically installed onto a concrete footing, to support the roof and necessary electrical and pipework systems for the drawing of fuel from the fuel storage tank and dispensing to motor vehicles and equivalents. The pumps (17), automatic dispenser (9) and other necessary ground-based equipment are installed on the island (6, 7), which is in turn supported (11, 12) on the roofs concrete footing.

Previous inventions towards fueling stations have provided underground tanks, underground piping, or both to provide fuel to dispenser stations. These stations require substantial preparation of the location site as the ground must be cleared and excavated prior to installation of the tanks and the piping. Additionally, the underground piping and tanks provide a possibility for leaks of fuel into the ground, forcing station owners to periodically test the site for leaks. As can be appreciated, testing underground is difficult, and therefore, a need exists to eliminate or reduce the cost of testing underground for leaks.

Thus, it may be seen that these prior art patents are very limited in their teaching and utilization, and an improved fuel station with above-ground tank storage and above-ground piping is needed to overcome these limitations.

SUMMARY OF THE INVENTION

The present invention is directed to an improved fueling station structure without subterraneous tanks or piping and an improved fuel station island configuration.

In one embodiment, the invention includes a fuel tank area having above-ground fuel tanks and fuel piping and a canopy area having a kiosk and above-ground piping extending along the roof of the canopy under the decking and descending within columns to fuel station islands having above-ground piping and containment.

It is an object of the present invention to provide a fueling station structure which eliminates the need for underground fuel pipes and fuel tanks.

It is an object of the present invention to provide a fueling station structure which can be easily monitored for fuel leaks.

It is a further object to provide a fuel station structure which allows for easy installation of fuel tanks.

It is a further object to provide a fuel station structure which is easily constructed on-site.

It is a further object to provide a fuel station island structure which is constructed off-site and easily installed on-site.

These and other objects and advantages of the present invention, along with features of novelty appurtenant thereto, will appear or become apparent by reviewing the following detailed description of the invention.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

In the following drawings, which form a part of the specification and which are to be construed in conjunction therewith, and in which like reference numerals have been employed throughout wherever possible to indicate like parts in the various views:

FIG. **1** is a top cutaway view of my new improved fueling station and showing line **2-2** and line **3-3**;

FIG. **2** is a front side cutaway view of the fueling station along line **2-2**;

FIG. **3** is a front side view of the nozzle dispenser stations of the fueling station along line **3-3**;

FIG. **4** is a front side view of a two-nozzle dispenser station;

FIG. **5** is a front side view of a one-nozzle dispenser station;

FIG. **6** is a front side cutaway view of the fuel tank area along line **2-2**;

FIG. **7** is a front side cutaway view of the fuel piping rack;

FIG. **8** is a front side cutaway view the fuel station island; and

FIG. **9** is a top cutaway view of a fuel station island.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is directed to a fuel station. Specifically, the present invention provides a fuel station with multiple above-ground storage tanks **510**, **511**, **512** having submerged pumps **2000** to deliver fuel under pressure to fuel dispensing islands by way of above-ground piping **1501** hung under a canopy **1500** covering the fuel dispensing islands.

As shown in FIG. **1** of the drawings, one exemplary embodiment of the present invention is generally shown as fuel station structure **100** for fueling vehicles. As contemplated by the present invention, the fuel station **100** utilizes above-ground storage tanks **510**, **511**, **512** for fuel storage and above-ground fuel pipes **1501** to transport fuel from the tank storage **500** to fuel dispensing islands **1000**.

As shown in FIG. **1** and FIG. **2**, the fuel station **100** generally includes a fuel tank storage area **500** and a canopy area **1500** supporting and housing the fuel pipes **1501**, fuel dispensing islands **1000**, and kiosk **900** for service station control equipment and/or attendant. Fuel pipes **1501** are hung under the canopy decking **1515** down the center of the canopy.

The tank storage **500** generally includes multiple fuel tanks **510**, **511**, **512**, a reinforced wall structure **505** and foundation **504**, a catwalk **506**, bolted manways **507**, and tank gauges **508**. Other fuel tank equipment known in the art may also be included within the tank storage area **500**. Multiple tanks **510**, **511**, **512** are utilized to allow for the storage of multiple fuel types, such as regular unleaded, premium unleaded, and diesel.

Fuel may be delivered to the fuel station structure **100** by a tanker truck. The tanker truck connects to an off-loading piping system **3** via a spill containment device **4**. The driver of the tanker truck manually checks the current product levels in the fuel tanks. The driver determines the type of fuels which need to be replenished and then opens the desired valves **9** leading to the correct tanks. The fixed off-loading pump **3** is turned on allowing the fuel from the tanker to be transferred to the tanks. An electronic site monitoring system **508** is used to monitor the rising fuel level. Should the tank reach an "overfill" level, the monitoring system signals an alarm, typically an audio-visual alarm, and the monitoring system removes power to the off-loading pump. The "overfill" level can be set at any height required. The monitoring system may be manually reset to continue adding fuel beyond the set capacity. The monitoring system may be altered or programmed to allow for federal, state or local requirements for capacity of tanks and storage of flammable liquids.

The fuel tanks **510**, **511**, **512**, as shown in FIG. **6**, are generally of steel construction with an annular space between the tank exterior **515** and the tank interior wall **514**. Those skilled in the art will recognize that fiberglass tanks commonly used in the industry can be frequently damaged during subterranean installation for fuel stations. The present fuel station **100** removes this possibility by installing its steel tanks **510**, **511**, **512** above-ground within its wall structure **505**. The annular space of the fuel tanks **510**, **511**, **512** is

monitored by the electronic site monitoring system. Each tank contains pressure and vacuum vents.

The wall structure **505** and foundation **504** of the tank storage area **500** are generally used for aesthetics, support and protection of the tanks **510**, **511**, **512**. The wall structure **505** is composed an exterior wall **516** and an interior structure **517** to provide additional protection around the tanks **510**, **511**, **512**. The wall structure **505** and foundation **504** are generally composed of concrete or other similar sturdy materials, such as sheet metal, steel, stone or brick.

The fuel tank storage area **500** is generally set apart from the canopy area **1500** to distance the fuel tanks **510**, **511**, **512** away from the traffic of the canopy area **1500**. In this manner, customers for the fuel station **100** are not impeded by the fuel tanks **510**, **511**, **512** while using the fuel station **100**. Fuel pipes **1501**, **1502**, **1503** running along the canopy **1500** transport the different fuels from the fuel tanks **510**, **511**, **512** to the fuel dispensing islands **1000**.

The canopy area **1500** generally includes a multitude of columns **1510**, flat canopy decking **1515**, the fuel pipes **1501**, **1502**, **1503**, and a multitude of fixtures **1516** to attach the pipes **1501**, **1502**, **1503** to the canopy **1515**. The canopy decking **1515**, the fuel pipes **1501**, **1502**, **1503** and the fixtures **1516** are typically composed of a metal, a metal alloy, or a composite material. The columns **1510** additionally have metal or metal alloy parts, but may also be composed of alternative materials such as concrete, stone, or brick.

The pipes **1501**, **1502**, **1503** are welded together to form a substantial barrier against leaks. The pipes **1501**, **1502**, **1503** run from a submerged electric pump **2000** in the tanks **510**, **511**, **512** parallel with the ground or substantially parallel to the ground until the pipes **1501**, **1502**, **1503** reach the wall structure **505** of the storage area **500**. The pipes **1501**, **1502**, **1503** connected to the submerged pump **2000** may be rigid metal piping or semi-rigid fire-resistant piping. The pipes **1501**, **1502**, **1503** then turn ninety degrees and run ascend upwards, parallel to the wall structure **505**, until the pipes **1501**, **1502**, **1503** are raised approximately fifteen feet in the air, below the height of the canopy decking **1515**. The ascending pipes form the ascending portion of the piping system. The pipes **1501**, **1502**, **1503** then turn ninety degrees and run parallel to the ground across to the canopy decking **1515**.

The canopy decking **1515** runs parallel to the ground or substantially parallel to the ground over the pipes **1501**, **1502**, **1503**. As shown in FIG. **7**, the canopy decking **1515** covers the top **1505** of the pipes **1501**, **1502**, **1503**. Fixtures **1516**, such as u-bolts, are used to affix the pipes **1501**, **1502**, **1503** below the canopy decking **1515**. In this manner, the pipes **1501**, **1502**, **1503** are sheltered from the elements. Additionally, the pipes **1501**, **1502**, **1503** are easily visible to the fuel station attendant to monitor the fuel pipes **1501**, **1502**, **1503** for leaks. As will be appreciated by those skilled in the art, fuel station with subterraneous fuel pipes must be monitored at least once a year to determine if any fuel has leaked into the ground. Typically, this monitoring requires substantial time and funding for a fuel station as the station must be closed and an independent monitoring group must be paid to observe the fuel tanks and pipes. The present invention eliminates these costs by providing fuel pipes **1501**, **1502**, **1503** which may be monitored by the owner of a regularly paid employee. The exposed pipes **1501**, **1502**, **1503** below the canopy decking **1515** will allow leaks to be readily apparent to an attendant or an owner. All electrical conduits are routed above the canopy decking **1515**.

As shown in FIG. **1**, the fuel pipes **1501**, **1502**, **1503** run along the canopy decking **1515** until turning at ninety degree angles to travel towards a fuel station island **1000**. The fuel station **100** may feature one or more fuel dispensing islands **1000**. The embodiment shown in FIG. **1** utilizes five islands **1000**. The two of the fuel pipes **1501**, **1502**, **1503** connect to the each of the islands **1000** by traveling across the canopy decking **1515**, forming an elevated piping system, and then descend downwards, perpendicular to the ground, along, or within, columns **1510** placed by each island **1000**, forming a descending portion of the piping system. In another embodiment, three fuel pipes **1501**, **1502**, **1503** carrying fuel connect to an island **1000** located under the center of the canopy **1515**. The columns **1510** may provide protection around the fuel pipes **1501**, **1502**, **1503** until the pipes connect with the fuel dispenser **1600** located on the island structure **1000**. In a preferred embodiment, the columns **1510** may feature a metal panel **1511** around the base **1512** of the column **1510** to provide additional protection to the pipes **1501**, **1502**, **1503**. The panel **1511** may additionally allow access to the pipes **1501**, **1502**, **1503** through the column base **1512**.

The pipes **1501**, **1502**, **1503**, after reaching the base **1512** of the column, again turn ninety degrees to run parallel to the ground. The island **1000** may abut the column **1510** to allow access for the pipes **1501**, **1502**, **1503** to the island **1000** or the island **1000** may be distanced from the column **1510** with the pipes **1501**, **1502**, **1503** running under a protective cover **1518** to access the island **1000**. The protective cover **1518** generally includes a top **1519**, a front side **1520**, and a back side **1521** composed of metal panels running from the base **1512** of the column **1510** to the left side **1103** of the island **1000** to provide additional protection to the pipes **1501**, **1502**, **1503**. The protective cover **1518** may additionally allow access to the pipes **1501**, **1502**, **1503** by way of a door cut into the top **1519** of the cover.

The terminus for the fuel pipes **1501**, **1502**, **1503** is the fuel station island **1000**. The island **1000** generally features the island base **1100** and fuel dispenser **1600**. The present invention provides a fuel island base **1100** which may be constructed off-site for easy installation at the fuel station **100**.

As will be appreciated by those skilled in the art, island bases are typically formed on-site at the fuel station **100** by pouring concrete in the island formation around exposed under-ground fuel piping. The island base **1100** of the present invention differs from the previous island bases by using above-ground piping as well as an easily installed island form. The island base **1100** may be generally formed in the bone shape of traditional island bases. The base **1100** generally has a fuel piping **1115** which connects to the fuel pipe **1501**, **1502**, **1503** of the canopy **1500**, a dispenser sump **1125** which contains any leaks which may develop inside the dispenser **1600** or fuel lost during filter changes, and a frame structure **1110** having an exterior shape and formed of a metal or a metal alloy with a top **1101**, a bottom **1102**, a left side **1103**, a right side **1104**, a front **1105**, and a back **1106**. The frame structure **1110** further includes reinforcing bars **1155** within the center **1131** of the frame **1110**.

The fuel system exterior to the fuel station island, namely the fuel pipes **1501**, **1502**, **1503** of the canopy area **1500**, connect to the fuel station island at junction **1530**. In the preferred embodiment, junction **1530** is formed under the protective cover **1518** on the left side **1103** of the island base **1100**. Junction **1530** is formed by a welded flange-fitting joint of the fuel pipes **1501**, **1502**, **1503** and the fuel piping **1115** of the island **1100**. The fuel piping **1115** runs from the exterior left side **1103** of the island **1100**, through the central region **1131** of the island base **1100**, to the dispenser sump **1125**. At the dispenser sump **1125**, the piping **1115** turns ninety

degrees, running perpendicular to the ground, and travels up to a shear valve **1150** for connection to the fuel dispenser **1600**.

The base frame **1110** is generally constructed prior to installation of the island base **1100**, preferably off-site. The island form is then constructed with the base frame **1110**, the piping, shear valves **1150**, dispenser sump **1125**, and anchors **1188**. The island form is then positioned at a cleared place at the fuel station **100** site, bolted to the ground using expansion anchors and then filled with concrete to the top of the island form. The island base **1100** then may be used to mount the fuel dispenser **1600** atop the island base **1100** above the dispenser sump **1125**. The dispenser sump **1125** have bolting flanges for the base of the dispenser **1600**. The product piping is then connected to the dispenser.

From the foregoing, it will be seen that this invention is well adapted to obtain all the ends and objects herein set forth, together with other advantages which are inherent to the structure. It will also be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims. Many possible embodiments may be made of the invention without departing from the scope thereof. Therefore, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A filling station structure located on a foundation and providing fuel to refueling vehicles, said filling station structure comprising:

at least one fuel storage tank holding fuel to be dispensed to vehicles, said fuel storage tank located above the foundation and having at least one pump adapted to deliver fuel;

a canopy covering a vehicle refueling area, said canopy being elevated above the level of the vehicles to be refueled and having a decking above said vehicle refueling area; and

a piping system transmitting fuel from said at least one fuel storage tank and fluidly connected to said pump, said piping system comprising:

an elevated piping system located above the foundation and being mounted to said canopy;

a descending piping system located above the foundation; and

at least one fuel dispenser fluidly connected to said piping system.

2. The filling station structure of claim **1**, said elevated piping system mounted to said canopy decking.

3. The filling station structure of claim **2**, said elevated piping system being within said vehicle refueling area.

4. The filling station structure of claim **1**, said descending piping system being mounted perpendicular to said canopy.

5. The filling station structure of claim **1**, said canopy having lights mounted to said decking.

6. The filling station structure of claim **1**, said at least one pump being submerged.

7. A filling station structure located on a foundation and providing fuel to refueling vehicles, said filling station structure comprising:

at least one fuel storage tank holding fuel to be dispensed to vehicles, said fuel storage tank having at least one submerged pump adapted to deliver fuel under pressure;

an elevated structure covering a refueling area, said elevated structure above the level of the vehicles to be refueled; and

a piping system transmitting fuel from said at least one fuel storage tank and fluidly connected to said submerged pump, said piping system comprising:

an elevated piping system located above the foundation and being mounted to said elevated structure within said refueling area;

a descending piping system located above the foundation and being perpendicular to said elevated structure; and

at least one fuel dispenser structure fluidly connected to said filling station piping system.

8. The filling station structure of claim **7**, the at least one fuel dispenser structure further comprising:

an island base form composed of a frame structure having an outer wall and reinforcing members;

a piping system providing at least one fuel from the exterior fuel system to within said fuel dispensing structure, said piping system comprising

at least one pipe fluidly passing through said outer wall, said at least one pipe being above the foundation;

a valve fluidly connected to said at least one pipe and being above-ground; and

a dispenser for dispensing fuel, said dispenser fluidly connected to said valve.

9. The fuel dispenser structure of claim **8** further comprising a plurality of anchors affixed to said frame structure, said anchors adapted to secure to the foundation.

10. The fuel dispenser structure of claim **8** further comprising a dispenser sump contained within and secured to said frame structure.

11. The fuel dispenser structure of claim **8** further comprising a junction for connection to the exterior fuel system, said junction being above the foundation and located exterior to said outer wall of said island base form.

12. The filling station structure of claim **7**, said elevated structure comprising a canopy.

13. The elevated structure of claim **12**, further comprising a decking for mounting lights.

14. The fuel dispenser structure of claim **7**, said island base form further comprising a concrete interior fill within said outer wall.

15. The filling station structure of claim **7**, said fuel storage tank located above the foundation.

16. The filling station structure of claim **7**, said piping system further comprising an ascending piping system.

17. A fuel dispensing structure adapted to secure to a foundation and connected to an exterior fuel system, the fuel dispensing structure comprising:

an island base form comprising a frame structure having an outer wall and reinforcing members;

a piping system providing at least one fuel from the exterior fuel system to within said fuel dispensing structure, said piping system comprising

at least one pipe passing through said outer wall, said at least one pipe being above the foundation;

a valve fluidly connected to said at least one pipe and being above-ground; and

a fuel dispenser, said fuel dispenser fluidly connected to said valve.

18. The fuel dispensing structure of claim **17**, further comprising a dispenser sump contained within and secured to said frame structure.

19. The fuel dispensing structure of claim **17**, said island base form further comprising a concrete interior fill within said outer wall.

20. The piping system of claim **17** further comprising a junction connecting to the exterior fuel system, said junction being fluidly connected to said and located at least one pipe above the foundation exterior to said outer wall of said island base form.

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